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## Information Technology: Gateway to Direct Democracy in China and the World

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The world watches as China moves towards greater democracy. The question in everyone's minds, including Chinese themselves, is "what model will China arrive at, at the journey's end?" There are many lessons to be learnt from other countries, some positive (Tanzania) and some negative (Laos). The United States has no doubts about the "goodness" of its own model but their unthinking belief in the superiority of their model should not be accepted at face value. The Chinese government and people will understandably be considering various different models very carefully, so that they can choose the best possible model for their country, and their own context. In this paper we will consider why current Western models of constitution should be viewed with caution by China as it attempts to move towards an improved socialist democracy. The paper considers the electronic voting system used in the US presidential elections, and draws attention to the opportunities for vote rigging that this type of electronic voting facilitates. It also looks at models of democracy used in the ancient world, and compares these with modern systems. Finally, it presents a secure and anonymous mechanism for electronic voting on issues of concern to the population. We conclude by sounding a note of caution about the dangers of plebiscites being used as rubber stamps by dictators if there are inadequate controls over who puts issues to the vote.

**Keywords:** information technology; voting; democracy

### Introduction

China is modernizing at an incredible pace, and this has led to a larger, more educated (IIASA 2011; also see figure 1) and more politically aware population (Pei 1995). There has been an increasing level of participation in internet political forums (Chen and Du 2005; Li 2008). There is a clear need to create an improved democracy which will be more appropriate to the country's new social structure. What shape should this future be? Clemens (1999) argues for a gradual move to multi-party democracy. Calls for change do not only come from the West. The Chinese themselves are not passive in this matter. President Hu Jintao has referred to democracy as "the common pursuit of mankind" (quoted in Thornton 2008). Yu Keping, a prominent Chinese political scholar, recently released a book titled *Democratic Governance and Political Reform in China*. Bandurski (2012) provides an English translation for the following excerpt:

Democracy is a good thing, and this is not just for specific persons or certain officials; this is for the entire nation and its broad masses of people. Simply put, for those officials who care more about their own interests, democracy is not only not a good thing; in fact, it is a troublesome thing, even a bad thing. Just think, under conditions of democratic rule, officials must be elected by the citizens and they must gain the endorsement and support of the majority of the people; their powers will be curtailed by the citizens, they cannot do whatever they want, they have to sit down across the people and negotiate. Just these two points alone already make many people dislike it. Therefore, democratic politics will

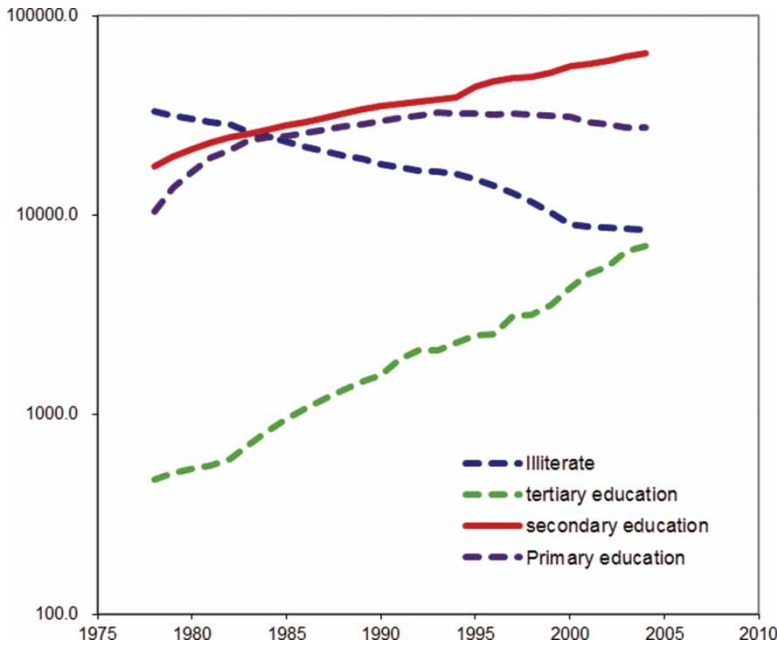
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not operate on its own; it requires the people themselves and the government officials who represent the interests of the people to promote and implement.

Gilley (2008) sounds a note of caution, pointing out that democratization has not always succeeded, citing Pakistan, Sri Lanka and the Philippines as examples. He also points out that continued one-party rule, while it has served Singapore and Malaysia well, has been a disaster for Myanmar and Laos.

Figure 1. Trends in educational levels in China.



Source: Zhang, Huan, and Li (2006).

Given the clear signs from China itself, and the lessons from the surrounding Asian countries, it is likely that it will be embarking on a democratization process in the near future. During the press conference of the National People's Congress (NPC) session early 2008, Mr. Wen said that only when people trust you, will they support you in your office. Now China has direct elections at village level and also direct elections of People's Deputies at township level. At the same time, he has always believed that if the people have the ability to run the village affairs well they are capable of running the township affairs and the county affairs and then running the provincial affairs. In this entire process Chinese should take a step by step approach in the light of China's own conditions and to develop a democracy with Chinese features (Transcript: Wen Jiabao, accessed December 16, 2012. <http://www.ft.com/cms/s/0/795d2bca-f0fe-11dd-8790-0000779fd2ac.html#axzz2DvG15P3J>). The obvious question, which we want to address in this paper, is: what model of democracy should China embrace?

### Models of Democracy: Republics and Monarchies

The Western world presents two models of political state: constitutional monarchies and republics. A century or so ago, it may have seemed a plausible argument that republics were more

progressive than monarchies. Socialism and republicanism were closely associated. Today these differences seem marginal. It is hard to claim that republics such as the United States, Italy or Mexico are socially more progressive than explicit monarchies such as Sweden, Canada or Japan.

Japanese and Canadians do not hold their monarchic constitutions up as examples for the rest of the world to follow. The Japanese do not propagandize for China to restore the Emperor system. The Canadians do not advocate that any should emulate them or pay homage to the Queen of England. Since China re-claimed control over Hong Kong, directly removing the Queen's influence, it would seem a step in the wrong direction. The American republic, on the other hand, is less modest. It advertises and promotes its model as the gold standard for world democracy to emulate (Huntington 1984). US spokespeople suggest that the US model of democracy is one that countries like China should duplicate (Gamer 1994). The United States claims to be more modern and democratic than the monarchies of Northern Europe or Japan, with a constitution designed from the outset as one basing on popular sovereignty. Because the US model makes these claims, the focus of this paper will be on critiquing the US form of constitution before presenting more viable alternatives.

We will argue here that the presentation of the United States as a democracy is misguided. The appropriation of the label *democracy* by the United States involved a fundamental corruption of what the word "democracy" originally meant. Democracy is a Greek word meaning literally "rule by the demos," a term which is often translated by modern authors as meaning rule by the people, but that is misleading as it skates over the nuances of the word *demos*. The word did not just mean "the people" but "the common people" or "working people," so in the ancient world it originally meant rule by the working classes:

A democracy exists whenever those who are free and are not well-off, being in the majority, are in control of the government, an oligarchy when control lies with the rich and better born these being few. (Aristotle 1986, 245)

As birth wealth and education are the defining marks of oligarchy, so their opposites, low birth, low incomes and mechanical occupations, are regarded as typical of democracy. (Aristotle 1986, 364)

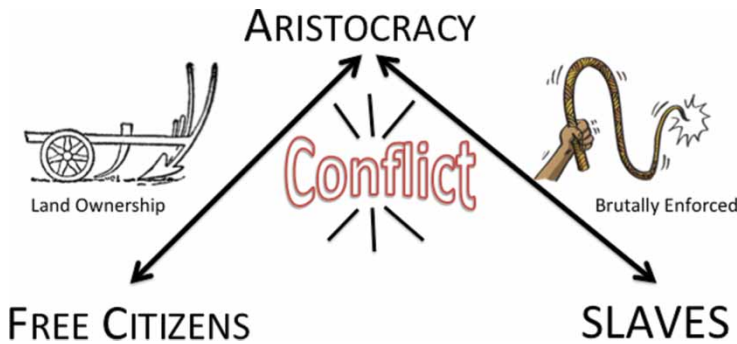
In fact, the constitutional structure of the United States is a compromise between the wishes of independent peasants and artisans in the northern states and the slave-holding aristocracy of the south at the time of independence. Although only 25% of white families owned slaves, slavery was crucial to commercial production and the export trade. The United States was predominantly a slave state in terms of the surplus produced, so the upper class was dominated by the slave owners until the civil war.

The slave owners wanted a republic in which real power would be concentrated in the hands of the slave owners and other wealthy sectors: not a simple democracy. The structure they chose was closely modelled on the constitution of the Roman republic.

In slave societies like ancient Rome, or the United States in the early twentieth century, there were three main classes (Ste-Croix 1981):

- (1) At the top was the slave owning aristocracy who did no direct productive work, but lived off the labour of the slaves they owned.
- (2) Below the aristocracy was a class of free citizens who worked for a living. These would be small family farmers or artisans.
- (3) At the bottom was a class of slaves who had no political or civil rights and were the private property of the aristocrats.

Figure 2. Conflicts.



The main class conflicts in this system were between the slave owners and the slaves, on the one hand, and between the slave owners and the free citizens on the other (figure 2). Since the slaves had no political rights, either in Rome or the United States, the conflict between them and the slave owners was brutally physical, with the owners' dominance enforced by means of whips and chains. Free citizens, on the other hand, did have civil rights, and the fact that they outnumbered the richer slave owners meant that the political power of the slave owners was potentially threatened by the free peasants and artisans. The main conflict between the slave owners and free peasants was typically related to land ownership. The progress of slavery meant that more and more land fell under the control of the big slave estates, threatening to proletarianize the free citizens (Rostovtzeff 1927).

The Roman constitution was cleverly designed to give the semblance of power to these free citizens whilst actually concentrating real power in a senatorial class. The state structure in Rome was made up of:

- (1) The two Consuls who were elected for a year and who alternated in office on a monthly basis. They were equivalent to the president of the United States today. They had supreme command of the army and civil administration.
- (2) The Roman Senate, which could pass decrees and provide the class from which the consuls were generally chosen. The US Senate was explicitly modelled on this.
- (3) The *comitia centuriata* or assembly of the centuries which elected the consuls. It worked by indirect election. The centuries were originally military units, and there were different centuries for different ranks of soldiers. The lowest ranking class of soldiers, *proletarii*, were only allowed to vote if there was a tie among the higher class ranks. Each century voted on who they wanted for consul, and sent a representative to the *comitia centuriata* to cast one vote for the consul they had chosen. The exact same indirect electoral system was adopted by the United States for the election of the president. The states elect delegates to the Electoral College, where they cast their vote for the president.
- (4) The Plebeian Council—this was a mass democratic assembly that could pass laws. It could not, however, set its own agenda, having to vote on motions put to it by magistrates who were invariably from the upper classes. There is no directly equivalent institution to this in America where its place is taken by the House of Representatives.

The effect of this structure was that executive power in Rome was always held by a member of the slave-owning patrician class. The Roman Senate, likewise, was always made up of slave owners rather than common people. Similar effects were achieved in the United States. Of the

first 10 presidents of the United States only two, John Adams and John Quincy Adams, were not slave owners.

However, a republic also relied on the free citizens, particularly to form the army. They had to be given the semblance, but not the reality, of power. In Rome two mechanisms were used to achieve this: firstly elections, specifically indirect elections, and secondly control over the agenda at the popular assembly by upper-class magistrates. Elections, ancient political theorists argued, always favour the wealthy. Aristotle (1986, 4.1294b) said, “It is thought to be democratic for the offices to be assigned by lot, for them to be elected is oligarchic.” The wealthy are in a position to spend money to influence elections and are also likely to have an education that prepares them to be convincing public speakers. Secondly an indirect election tends to increase the effects of any bias in the initial results. For example, George W. Bush won the 2000 election on the electoral college system even though he had fewer popular votes than Al Gore (Starr 2001).

A constitution in which executive power is concentrated in the hands of one elected official is advantageous for the wealthy. It takes a huge sum of money to win a presidential election so the candidates inevitably become dependent on wealthy patrons. At times of heightened social conflict a powerful presidency can be used by the wealthy to impose draconian programmes that would not have popular support (see figures 3 and 4). The example of such a presidential constitution in Russia, and the effect it had on that country’s subsequent economic and social development, is probably relevant to Chinese readers.

Whilst ancient Rome at least allowed some element of direct democracy, in the United States this element, the popular assembly, was removed and replaced by the elected house of representatives, where, again, money speaks. Election to this body is completely controlled by the two official political parties, the Republicans and Democrats, both of which are, in turn, dependent on funding by wealthy individuals and companies. As a consequence, the supposedly representative bodies of the United States are, on statistical grounds, singularly unrepresentative of the population as a whole.

Figure 3. The meaning of the Hitler salute: Millions stand behind me.



Note: The cover of German Communist Party magazine *Arbeiter Illustrierte Zeitung* parodied Hitler’s elections slogan “millions stand behind me.” Hitler meant that millions of voters stood behind him, the magazine suggested that these were votes bought with the money of his millionaire backers.



Figure 4. Tanks sent by President Yeltsin attack the Russian parliament to impose presidential rule when parliament opposed his privatisation programme.



Source: Image from [http://upload.wikimedia.org/wikipedia/en/b/ba/Tanks\\_before\\_Russian\\_White\\_house.jpg](http://upload.wikimedia.org/wikipedia/en/b/ba/Tanks_before_Russian_White_house.jpg).

Officeholders at every level of government are, on average, better-off than the people they represent by virtually any measure of class or social attainment. The median individual net worth among members of Congress, for instance, is estimated at almost \$800 thousand (Center for Responsive Politics 2009), or more than six times the median net worth among American families (Bucks et al. 2009). The alumni of 13 prestigious universities have constituted about 15% of the House of Representatives and 25% of the Senate in every Congress since the 1950s, whereas their living graduates make up less than 1% of all adults. And lawyers and businesspeople, who comprised approximately 10% of the nation throughout most of the twentieth century, made up more than 75% of every Congress that served during that time. Similar patterns have been documented among presidents, Supreme Court justices, state and local lawmakers, and high-ranking bureaucrats (Carnes 2011).

If all these powers were still not sufficient to protect the interests of the US elites, the constitution provides an elaborate system of veto powers so that it becomes very hard to enact any system of radical reform. Those fighting for reforms would first have to gain control of one of the political parties or set up a new party. That party would then have to gain control of all three elected bodies: the Presidency, the Senate and the House of Representatives. Even then, reform measures could be struck down by an unelected Supreme Court.

The last time that such a process occurred successfully in the United States was with the foundation of the Republican Party as an anti-slavery party in 1854, and the election of their candidate Abraham Lincoln in 1860.

Marx drew attention to the way the bourgeois revolutions of the eighteenth century deliberately borrowed forms from the Roman Republic:

But unheroic though bourgeois society is, it nevertheless needed heroism, sacrifice, terror, civil war, and national wars to bring it into being. And in the austere classical traditions of the Roman Republic the bourgeois gladiators found the ideals and the art forms, the self-deceptions, that they needed to conceal from themselves the bourgeois-limited content of their struggles and to keep their passion on the high plane of great historic tragedy. Similarly, at another stage of development a century earlier, Cromwell and the English people had borrowed from the Old Testament the speech, emotions, and illusions for their bourgeois revolution. When the real goal had been achieved and the bourgeois transformation of English society had been accomplished, Locke supplanted Habakkuk. (Marx [1852] 1979, 104)

The French revolution led soon to the empire of Napoleon I, another deliberate borrowing from antiquity. Under Napoleon, the state machine characteristic of modern society was perfected, and increasingly took on, according to Marx, the character of an instrument of repression:

During the subsequent regimes, the government, placed under parliamentary control—that is, under the direct control of the propertied classes—became not only a hotbed of huge national debts and crushing taxes; with its irresistible allurements of place, pelf, and patronage, it became not only the bone of contention between the rival factions and adventurers of the ruling classes; but its political character changed simultaneously with the economic changes of society. At the same pace at which the progress of modern industry developed, widened, intensified the class antagonism between capital and labour, the state power assumed more and more the character of the national power of capital over labour, of a public force organized for social enslavement, of an engine of class despotism. (Marx 1871)

In 1870 a democratic rebellion took place in the city of Paris that led to what was called the Commune of Paris, a commune being the French unit of local government. The constitutional structure set up by the Commune had a big influence on Marx's thinking about democracy and through Marx, influenced constitutional thought in the USSR (Union of Soviet Socialist Republics). What he saw as the key innovations of the commune were that:

- (1) the standing army was replaced by the National Guard—a volunteer defence force under the control of the municipality;
- (2) the commune was made up of municipal councillors elected by universal suffrage. These local councillors were largely working men;
- (3) the councillors were paid no more than average workmen's wages; and
- (4) elections to other higher bodies were to be hierarchical and indirect.

He wrote that:

The Paris Commune was, of course, to serve as a model to all the great industrial centres of France. The communal regime once established in Paris and the secondary centres, the old centralized government would in the provinces, too, have to give way to the self-government of the producers.

In a rough sketch of national organization, which the Commune had no time to develop, it states clearly that the Commune was to be the political form of even the smallest country hamlet, and that in the rural districts the standing army was to be replaced by a national militia, with an extremely short term of service. The rural communities of every district were to administer their common affairs by an assembly of delegates in the central town, and these district assemblies were again to send deputies to the National Delegation in Paris, each delegate to be at any time revocable and bound by the *mandat impératif* (formal instructions) of his constituents. The few but important functions which would still remain for a central government were not to be suppressed, as has been intentionally misstated, but were to be discharged by Communal and thereafter responsible agents. (Marx 1871; emphasis in original)



This model of democracy was later taken up by Lenin. According to him the key principles (see figure 5) were:

- (1) that parliamentary representative institutions should be replaced by Soviet representative institutions operating by indirect election;
- (2) that all representatives must be subject to recall; and
- (3) that representatives should be paid no more than an average worker.

These three principles were taken as the foundation stones of democratic theory by most subsequent Marxist writers. They do suffer from certain weaknesses which were not evident in France, since the whole system was never put into practice there.

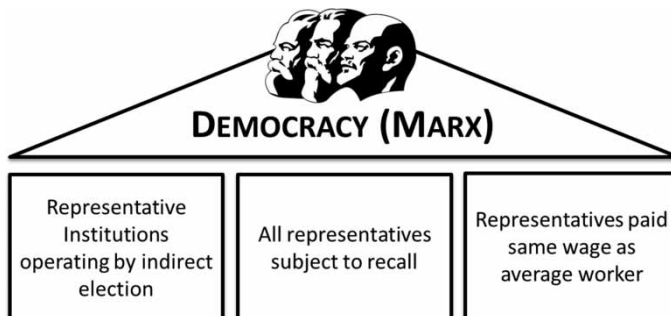
The principle of recall, derived from the Commune, was incorporated in the constitution of the USSR, but also in the constitution of some US states. In neither case was it heavily used. If one has a popular assembly that meets regularly and questions its representatives to some higher body, and changes them if their answers are unsatisfactory, then it has some utility but when we are talking of a person who may represent some 10,000 or 100,000 constituents, then it is less practical. It then becomes a mechanism with a great deal of inertia since it requires a significant fraction of the constituents to sign a demand for recall, and a subsequent ballot. So, whilst it may have some role as a check on misconduct by those in public office, it does not support a high level of participation under normal circumstances. At best, it acts as a safeguard against a representative who grossly abuses their position.

The principle of indirect election, whilst well suited to setting up a system of coordination in circumstances of revolution, is deeply flawed as a long-term solution. A system like the Commune or the councils (soviets) in Russia only comes to the fore and leads to the overthrow of the old autocracy if the local councils are dominated by *avant garde* activists.

With the October Revolution the councils became masters of Russia. Sweeping land reforms and nationalizations were coupled with social measures, such as freedom of divorce, rights for gay people and reorganization of the education system. Coupled with the council take-over was a wave of enthusiasm among the working class, with hundreds more councils created in the weeks following the revolution and, for the first time in history, mass participation in the administration of Russia. Sadly, this was not to last.

Consider the state structure actually set up in the Russian Revolution. Each 1000 city inhabitants, or 100 township inhabitants, was entitled to one delegate on their local council. This local council was responsible for running the local city or township affairs. The local councils then sent delegates to the All-Russian Congress of Councils, one delegate per 25,000 inhabitants for cities,

Figure 5. Democracy according to Marx.



one per 125,000 for rural districts. The All Russian Congress was not in continuous session. It met a couple of times a year and elected the Central Executive Committee which, in turn, elected 17 commissars who formed the government.

It is obviously a very hierarchical system tailor-made to be dominated by the organized *avant-garde*. Any system of elections is aristocratic, and tends to concentrate the influence of a well organized and disciplined party. In a hierarchical system of indirect elections this is intensified. Consider the factors that control party influence in such a system. At each level of election two steps are necessary. A person must first be nominated and they must then succeed in being elected.

It is clear that if one considers a random non-party citizen, and a random Bolshevik member, the Bolshevik is much more likely to be nominated as a candidate for election. Then, provided the initial reputation of the Bolsheviks was reasonably sound, the Bolshevik is more likely to win the election than an independent who stands against them. One can argue about just what the odds would be, but, as a plausible example, suppose that a Bolshevik party member is 50 times more likely to be nominated and 4 times more likely to be elected if nominated than a random citizen. This would give a 200 fold over-representation of Bolsheviks in the local soviets compared to their membership of the population.

Thus if the Bolsheviks made up 0.1% of the Russian population, with these odds they would already make up 20% of the local councils. The same concentrating process operates at each level of election, raising the proportions of party members as we progress up the hierarchy, till the top, the Council of Peoples Commissars were made up 100% of Bolshevik party members. This hierarchical concentration had occurred in 1918 even prior to the full outbreak of civil war. Since the government was dominated by the one party, the only real political debate took place within that party, and if that party felt threatened, it could use its central power to ban opposition groups.

This transfer of executive authority away from the soviets was an inevitable departure from working-class self-rule, one generated by the mathematical properties of Soviet Power. Formerly participatory organs of working-class democracy, the councils were increasingly marginalized after a decline in Bolshevik support upon the demobilization of the Tsarist army. Following big gains for the Socialist Revolutionary Party in the spring 1918 elections, where they won control of Tula, Iaroslavl, Kostroma, Sormovo, Briansk and Izhevsk, these councils were all shut down by force.

Engels remarked that it was an irony of history that the conspiratorial Blanquists who, on coming to power in Paris, took the greatest efforts to democratize France. The obverse irony was that the Russian Social Democratic Labour Party (RSDLP), nominally committed to the democratic spirit of the Paris Commune, should, within months of coming to power, have established a highly aristocratic constitution. Initially this was justified on the classic aristocratic basis that it was rule by those best qualified to do the job. The Bolshevik Party, it was argued, was made up of the most politically aware and dedicated members of the industrial working class. People had joined the Bolsheviks at great risk to their own safety from the Tsarist secret police. Even the Brezhnev generation of political leaders, who joined the party shortly after the revolution, had experienced great hardships and dangers fighting the Nazi invasion. Any communist officials captured by the Germans were summarily executed. Over time generational changes occur in such organizations. People joining in the 1950s faced no dangers: they saw it as a career path. Aristotle noted that aristocracies degenerate into oligarchies. We see the end result of this in the oligarchic system of Russia today.

The well-known Chinese Communist Mao Zedong claimed in 1940 that the transition to democracy in China would be significantly different from the process that Marx had analysed when writing about the great French Revolution. He said that because the transition to democracy was taking place in a semi-colonial country (large parts of China were then under Japanese

colonial occupation) and because the Chinese revolution was allied to the USSR, the democratic revolution in China would be more radical than had been the case in Europe:

Although such a revolution in a colonial and semi-colonial country is still fundamentally bourgeois-democratic in its social character during its first stage or first step, and although its objective mission is to clear the path for the development of capitalism, it is no longer a revolution of the old type led by the bourgeoisie with the aim of establishing a capitalist society and a state under bourgeois dictatorship. It belongs to the new type of revolution led by the proletariat with the aim, in the first stage, of establishing a new-democratic society and a state under the joint dictatorship of all the revolutionary classes. Thus this revolution actually serves the purpose of clearing a still wider path for the development of socialism. (Mao 1940)

The type of state that would emerge from this was, he said, different both from the “old European–American form of capitalist republic” and also from “Soviet type under the dictatorship of the proletariat.”

He was not very specific about the political constitution that he anticipated China having after the revolution, saying:

There is no state which does not have an appropriate apparatus of political power to represent it. China may now adopt a system of people’s congresses, from the national people’s congress down to the provincial, county, district and township people’s congresses, with all levels electing their respective governmental bodies. But if there is to be a proper representation for each revolutionary class according to its status in the state, a proper expression of the people’s will, a proper direction for revolutionary struggles and a proper manifestation of the spirit of New Democracy, then a system of really universal and equal suffrage, irrespective of sex, creed, property or education, must be introduced. Such is the system of democratic centralism. (Mao 1941)

The key difference between this and the Soviet system seems to have been that he envisaged that more than one political party would have representation in the congresses. He is not specific about whether he envisaged direct or indirect elections, or whether he anticipated these elections to be contested in a multi-party fashion.

When established, the People’s Republic of China (PRC) election system followed the Soviet model with direct elections at the lowest level of the hierarchy and indirect ones further up. The idea of the new state being the joint instrument of state power of several revolutionary classes was interpreted as the dominant Communist Party reserving seats on higher-level political bodies for smaller parties whilst retaining the overall control that the system of indirect elections allowed.

During the 1960s Mao worried that the effective monopoly of political power by the Communists would lead to corruption. He thus advocated the establishment of base-level democracy and the replacement of party and government departments by revolutionary committees, encouraged people to express their views via posters stuck up on walls, to get used to criticizing people in authority, etc.

The historical interpretation of Mao’s ideas of political democracy has proven controversial (Gao 2008). Fang Ning (2010, 178) writes:

Mao’s tragedy was that he did not find a proper form of democracy to realise the democratic politics that he had yearned for. He was let down by his own method. Due to its innate shortcomings, democratic politics ultimately entraps itself in contradictions which then lead to disorder and confusion.

Recent proposals to improve grassroots democracy in China have emerged (Shi 2004; Jiang 2004). These, however, remain within the framework of indirect elections.

### How Can the Unrepresentative Character of US or Roman Republican Style Elections Be Avoided?

The word *democracy* comes from the Greeks, *republic* from the Romans. Ancient Athens provides an alternative constitutional model. In ancient Athens, like Rome, slavery was an important part of the economy, but here the free peasants and artisans, rather than the rich slave owners, controlled the state. It is thus worth understanding what democracy originally meant to the Athenians (Finley 1983). Three principles were enshrined (see figure 6):

- (1) participation of all citizens in a mass democratic assembly which carried out all legislation and decided on issues such as the declaration of war, treaties, etc.;
- (2) the day to day administration was in the hands of a randomly selected council drawn by lot from among the citizens. This council also drew up the agenda for votes to be taken by the assembly; and
- (3) control of the law by the people. All courts were controlled by large randomly selected juries. There were no professional judges.

The aim was to ensure that all decisions were made either by the people as a whole or by a scientifically representative sample of the people. It is well known in social science that an accurate opinion survey of the population requires a large randomly selected sample of the whole population to be asked for their opinion. The reason why this works is due to the statistical phenomenon of regression to the mean. If you select a random sample from a population, the mean of the sample will tend towards and mimic the mean of the population from which the sample was drawn. The ancient Greeks made direct use of this scientific law in their political system. In order for samples to be reliable they must be unbiased. They achieved unbiased and random samples by using a sophisticated system of Bronze Age technology (Dow 1939) as illustrated in figure 7.

The selection by lot is the principle used today in all scientific opinion polling. It is also used in Anglo Saxon judicial systems to select juries. In the latter case its use is ancient, possibly dating back to pre-feudal Scandinavia (Forsyth and Morgan 1852).

Whilst voting by the whole population on key issues was practical in a city state, it is challenging, but not impossible, in a big country. Referenda are occasionally held in some countries, but are expensive and time consuming to organize. These difficulties are one justification given for the replacement of direct democracy with representative democracy. However, we argued above that the actual procedures used in countries, like the United States, ensure that what is called “representative democracy,” turns out to be very unrepresentative indeed.

Figure 6. Athenian democracy.

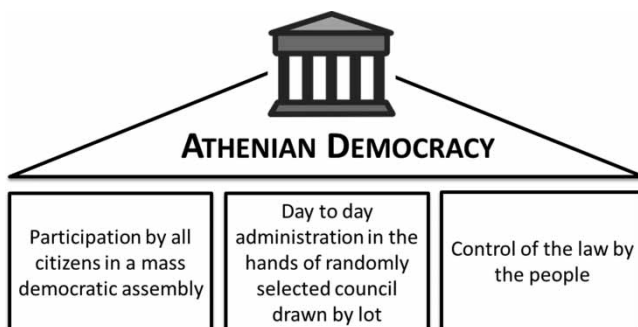


Figure 7. Kleroterion.



Note: This device was used for the jury selection system in Athens. Bronze identification tickets were inserted to indicate eligible jurors who were also divided into tribes. There was an attached tube filled with different-coloured dice. The dice were released one by one, each die corresponding to a row of tickets. The colour of each die determined whether of the owners of the ticket in the corresponding row were selected to hold office or to become jurists. There was a *kleroteria* in front of each court. Others were used for selection to the council. Bottom left are the identification tickets. Bottom right, ballot tokens use to vote yes or no with.

Source: Ancient Agora Museum in Athens. Image from [http://upload.wikimedia.org/wikipedia/commons/a/a5/AGMA\\_Kleroterion\\_1.jpg](http://upload.wikimedia.org/wikipedia/commons/a/a5/AGMA_Kleroterion_1.jpg).

Random sampling, on the other hand, *does* support the creation of genuinely representative legislative and deliberative assemblies, and we believe that there is a strong case for these being re-introduced in twenty-first century democracy. Indeed, *Time Magazine* reports that some areas in China are already introducing this system:

Actually, the Chinese coastal district of Zeguo (pop. 120,000) has its very own kleroterion, which makes all its budget decisions. The technology has been updated: the kleroterion is a team led by Stanford professor James Fishkin. Each year, 175 people are scientifically selected to reflect the general population. They are polled once on the major decisions they'll be facing. Then they are given a briefing on those issues, prepared by experts with conflicting views. Then they meet in small groups and come up with questions for the experts issues they want further clarified. Then they meet together in plenary session to listen to the experts' response and have a more general discussion. The process of small meetings and plenary is repeated once more. A final poll is taken, and the budget priorities of the assembly are made known and adopted by the local government. It takes three days to do this. The process has grown over five years, from a deliberation over public works (new sewage-treatment plants were favored over road-building) to the whole budget shebang. By most accounts it has succeeded brilliantly, even though the participants are not very sophisticated: 60% are farmers. The Chinese government is moving toward expanding it into other districts. (Klein 2010)



Modern information technology makes the random selection of citizens by electronic lottery technically trivial. However, there are political drawbacks related to performing such allocation automatically. It is very hard for the ordinary citizen to be sure that electronic allocation procedures are fair and unbiased. How can they tell what the software is actually doing when it selects some people rather than others to serve on a council? Can they be sure that the sampling is really random, or might it be rigged to select people who were previously known to favour a particular view?

The difficulty of placing trust in such electronic equipment is probably why financial lotteries still typically use systems of highly visible numbered balls being shaken before selection—essentially the same sort of physics as that used by the old Athenian machines.

### *Using Modern Technology*

One area where electronic technology *can* be applied is to national direct democracy. In some countries, national referenda or plebiscites are held on major constitutional issues. Their infrequency stems both from their complexity and the related expense, and also from the reluctance of elected politicians to give up any of their power to the people they supposedly represent.

Contrast this to what happens on TV. Every week there are reality TV shows or competitions which ask the viewers to phone in to vote for one contestant or another. What makes this worth doing, from the TV companies' point of view, is that they are able to charge viewers' phone bills every time they vote. The digital technology which allows incoming phone calls and short text messages to be rapidly counted makes this widespread participation possible. Commercial interests have resulted in a technology being developed, which, if applied in the field of national politics, would allow citizens to exercise real democratic control over the executive (Liu and Zhao 2010).

The advantage of cell phones, as a means of allowing direct democracy, is that they are cheap, simple and widely distributed across most countries, even in rural areas. They allow text messages to be sent and received in seconds. They use an existing network, and can be used in areas with a low-penetration level of landline phones. In contrast, traditional desktop computers are much more expensive and rely on a more or less continuous supply of electricity. Furthermore, the prevalent security problems experienced by desktop and laptop computers are likely to be a concern to voters. It is bound to be difficult for a voter to be sure that voting by computer really is confidential. How does the voter know that the software does not manipulate their votes: that their votes are indeed recorded and counted correctly?

The two elections that George W. Bush won were marred by controversy over the use of voting technology (Warf 2006). His first election utilized old computer punch cards. He only scraped by in this election thanks to the discounting of voting cards that Florida voting machines had difficulty counting. After his victory had been declared by the Supreme Court, counting of these discarded cards showed that he had, in fact, lost the election. In his second election, electronic voting machines were used, and he won again. Prior to the 2004 presidential election<sup>1</sup> there was considerable controversy over the fact that one of the most widely used new voting machines, the Diebold, was manufactured by a company whose director had pledged that he would ensure that Ohio's vote went to Bush:

Inviting Bush supporters to a fund-raiser, the host wrote, I am committed to helping Ohio deliver its electoral votes to the president next year. No surprise there. But Walden O'Dell who says that he wasn't talking about his business operations happens to be the chief executive of Diebold Inc., whose touch-screen voting machines are in increasingly widespread use across the United States.

<sup>1</sup>It was anticipated that the 2012 US election would cost \$6 billion dollars (Zengerle 2011).



For example, Georgia where Republicans scored spectacular upset victories in the 2002 midterm elections relies exclusively on Diebold machines. To be clear, though there were many anomalies in that 2002 vote, there is no evidence that the machines miscounted. But there is also no evidence that the machines counted correctly. You see, Diebold machines leave no paper trail. (Krugman 2003)

This prompted *Science*, the leading scientific journal in the United States, to print an editorial (Kennedy 2004) which said:

Computer science and cryptography experts can get passionate about the science issues here. The consensus view, with which a few will disagree, is that for traceability, electronic machines should provide for a voter-verifiable audit trail in which a computerized system prints a paper ballot that is read and verified by the voter. Such paper confirmation can be given to the voter privately, as well as be retained by officials for later verification. Most of the machines aren't equipped for this (including the ones that Maryland purchased, though Nevada has fared better with a vendor whose e-machines are fitted with voter-verifiable receipt printers). Although some machines can print vote totals and transactional information at the close of an election, these are not considered voter-verifiable.

For the moment, we will set the argued need for paper aside. Most voting machines don't support an auditable paper trail, so we shall ponder the following hypothetical scenario. It's the morning after Election Day, and it's still a tight race in the battleground state of Ohio. It looks as if the incumbent president will win the national election if he takes Ohio, but his lead is only 2000 votes. A team of Democratic lawyers is already challenging the count from several downstate jurisdictions in which voters are claiming that the vote recorded from their precincts shows large majorities for Bush in sharp disagreement with exit polls. Unfortunately, Diebold machines that do not provide voter-verifiable receipts are in use in this particular district, and public controversy is already high in the state (owing to an actual pre-election statement by Diebold's chief executive officer, a prominent Bush fundraiser, that he would deliver the state of Ohio to the president). Thus, the aftermath of a savagely partisan U.S. election turns into a field day for conspiracy theorists, and trust in government takes another hit.

*Science* had good foresight in this because a remarkably similar situation did arise in a number of closely contested states, giving rise to widespread suspicion that the voting machines had been rigged to deliver the vote to Bush:

Most revealing, the discrepancies between exit polls and official tallies were never random but worked to Bush's advantage in ten of eleven swing states that were too close to call, sometimes by as much as 9.5 percent as in New Hampshire, an unheard of margin of error for an exit poll. In Nevada, Ohio, New Mexico, and Iowa, exit polls registered solid victories for Kerry, yet the official tally in each case went to Bush, a mystifying outcome. In states that were not hotly contested the exit polls proved quite accurate. Thus exit polls in Utah predicted a Bush victory of 70.8 to 26.4 percent; the actual result was 71.1 to 26.4 percent. In Missouri, where the exit polls predicted a Bush victory of 54 to 46 percent, the final result was 53 to 46 percent. One explanation for the strange anomalies in vote tallies was found in the widespread use of touchscreen electronic voting machines. These machines produced results that consistently favored Bush over Kerry, often in chillingly consistent contradiction to exit polls. (Parenti 2006)

A study in *The Review of Economics and Statistics* (Card and Moretti 2007) concluded that there was a clear correlation between the use of Diebold voting machines and whether the vote went to Bush or to Kerry, though they were hesitant about concluding that this was evidence of fraud. Instead they argued that voting machines could have had a disincentive effect on Hispanic voters who tended to be Kerry supporters. Whether the 2004 US election was manipulated or not will probably never be known, but the existence of the controversy underlines the fact that any electronic voting system must be designed to provide the public with assurance that everything is fair, open and trustworthy. A cautionary note comes from Ireland, which spent €51 million on hi-tech voting machines in 2004. Newspapers recall Bertie Ahern's comment: "our

*stupid ol' pencils*" (Fay 2009), which seemed to play a role in convincing the Irish government to invest in the machines. Unfortunately the machines were never used because they were considered unusable and also because they did not support confirmation of votes cast or the ability to audit all votes cast on a particular machine. The government spent millions storing them and they were eventually sold, in 2012, for a paltry €70,000 ("Controversial €55m E-Voting Machines to Be Scrapped," *Irish Times*, June 28, 2012).

In order for the phone voting currently used by TV programmes to be used in anything more critical, something would have to be done to make it secure, which is currently not the case. In popular game TV phone voting, there is nothing to stop anyone voting as often as they wish for the candidate of their choice, provided they are willing to pay the charges. This is not as simple to prevent as it appears. The vote counting software could be designed so that it only counts a single vote from each phone, but this would not prevent somebody from voting multiple times from different numbers. This suggests the need for a validated list of numbers, matched to authorized voters, each of which would be permitted to cast one, and only one, vote. If everyone trusted the state, voters could provide a phone number when they register to vote. This would go a long way towards ensuring "one person-one vote," but what about countries where the government is feared? Would citizens not be afraid that the government could now easily find out how they had voted? Might that information affect the way the government dealt with them in the future?

### *Anonymous and Representative Suffrage*

Our previous discussion has concluded that what is needed is a way of identifying voters so that they can cast only one vote, but at the same time affording them the anonymity to vote without fearing repercussions. A possible mechanism for holding electronic plebiscites by telephone, called Handivote (Cockshott and Renaud 2009), operates as follows:

- (1) There is a fixed period during which people register and are added to the official voters roll. Once the person's right to vote has been verified, they will put their hand into a jar and pull out a sealed envelope containing one voter card (see figure 8). This card has a voter number on it, much like a credit card number. The number is unique, but because people randomly choose the card the electoral officials are not able to match the unique number to the voter.

The voter number is divided into two fields:

- (a) a unique voter ID, which, for China, would have nine or 10 digits; and
  - (b) a secret personal identification number (PIN) of four digits similar to a bank card PIN.
- (2) Whenever there is a referendum, the numbers to phone for YES or NO are prominently advertised on TV and in the newspapers. Voters can dial in and use the voter number to record a vote. Alternatively the voter could type the voter number into an SMS message and send that to the YES or the NO telephone number.

Software ensures that each voter number can be used to record only one vote. Effectively the vote is counted against the voter card number, and not against the telephone number, which ensures that each voter can cast only one vote. Furthermore, no one is able to link the vote to the voter. If the voter is concerned about repercussions, callers could withhold their number when making the call. Alternatively they could place their vote from a public telephone, which would allow voters to key in the voter number to record the vote. Calls to the voting number would have to be free.

- (3) Once the referendum period is over, the electoral commission will publish two lists: all the voter card numbers that recorded a YES vote and all the voter card numbers that recorded a NO vote.

Figure 8. Voter card with PIN (designed by Tian Xu).



This provides a publicly accessible audit trail. If a voter wishes to check that the vote was correctly registered it is trivial to do so. The published voter numbers will only include the unique voter ID but will have the PIN hidden, to prevent illicit subsequent use of the published numbers since the voter cards could be used to support a number of referenda.

In comparison to the multi-blind signature technique proposed by Lai and Fan (2003), the Handivote mechanism can work on old-fashioned non-smart phones. Wang, Han, and Chen (2006) review elaborate cryptographic electronic voting protocols, but the snag with using these is that a non-specialist would not readily understand them and thus not be sure that they were fair.

The election authorities will also publish the totals who voted YES and NO, and this is easily confirmed by anyone who wishes to do so. Publication of the list of votes also allows independent verification of the count of votes cast for each proposition. This avoids the secrecy that has bedevilled electronic voting in the United States where it led to suspicion that the voting machine firms, who sympathize with the Republican Party, have rigged the results of recent elections.

It is vital that voting cards are properly accounted for. Each electoral district would have to publish the ranges of voting card numbers it had issued, and the numbers on voting cards that remained at the end of registration. This is to prevent anyone from using unissued cards to vote fraudulently. Each person registering to vote would have to have their identification card or passport photocopied, and the electoral registration officer would be responsible for ensuring that the number of issued voter cards was equal to the number of recorded identifications.

### *Non-Binary Voting*

In the pilot project in Zeguo district mentioned above, the randomly selected council made decisions on budgetary questions affecting the district. Budgeting is more challenging for participatory democracy. A plebiscite allows just a YES or a NO vote. The only way in which the decision about district or provincial budgets could be put to a YES/NO vote would be if some other body first drew up detailed budget proposals and put them to the people for ratification. Procedurally, this is not unlike what happens with the parliamentary vote on the national budget in many countries. Again the voting body, parliament in this case, only has the option of outright veto if it does not like the budget.

Table 1. Average voting result.

	Voters	Change	Weighted change
	300,000,000	+10%	30,000,000
	200,000,000	0%	0
	100,000,000	−10%	−10,000,000
Total	600,000,000		20,000,000
Divide by voters		<b>3.3%</b>	0.0333

An alternative would be to develop some form of voting that allowed the population to alter the internal structure of the budget before approving it. Framing a budget differs from a simple YES/NO vote in that the decision contains more information. A binary vote contains only one bit of information, whereas a budget:

- has multiple aspects: defence, health, transport, education, etc.;
- there are positive and negative headings: positive for taxes, negative for spending;
- each of these is itself a number: billions of euros, dollars or Yuan; and
- there are dependencies between the headings. If we ignore borrowing by the government, the basic dependency is that the sum of expenditures must equal the sum of tax revenues.<sup>2</sup>

This more complex problem space raises all sorts of difficulties. The numbers that are spent by the government on main headings are vast and beyond the experience of ordinary people. If government asked individual citizens to suggest how much China should spend on health, for example, they would be very likely to underestimate what was needed. A more realistic question might be: should health spending be *increased*, *reduced* or *left the same*? In this case people are more likely to have a firm view. The concrete choice might be, for each item of expenditure the people vote to increase expenditure by 10%, reduce by 10%, or leave expenditure as it is. Suppose 300 million vote to increase health expenditure by 10%, 200 million vote to leave it the same and 100 million vote to reduce it by 10%; it is a simple matter to work out the average result (see table 1).

In this case the net choice would be a rise in health expenditure of 3.3%. This provides a feasible solution for voting on the large sums the state spends. The individual voter choices can be aggregated to arrive at a final number that represents a consensus choice.

This, then, gives rise to a subsequent problem. What if everyone wants to have expenditure increased but does not want taxes to rise? There is always the danger that people would vote inconsistently for infeasible combinations.

There clearly needs to be an agreed procedure for resolving differences. Suppose the population voted to increase total expenditure by 4% but only voted to increase taxes by 2%. There are three potential solutions:

- (1) We assume that the expenditure decision is binding and that this overrides the tax decision, so the upshot is that tax and expenditure both rise by 4%.

<sup>2</sup>This is a simplification introduced for explanatory purposes. In practice the state has some non-tax forms of revenue, and may also choose to borrow. These could be factored into the decision-making process in a real system.

- (2) We assume that the tax decision is binding, so that in this case both tax and expenditure would rise by 2%, with the increase in expenditure for each sub heading set to half of what the average vote had been for that aspect.
- (3) We split the difference and increase both tax and expenditure by 3%. This is probably the least unsatisfactory course of action.

If the people are to make sensible decisions on these issues there has to be plenty of prior public debate. This could take the form of opposing articles in papers, television debates between experts, television debates between members of the public. One can be sure that if such a referendum were to occur today, there would also be extensive discussions of the issues on the internet and on social media sites. It might well be worth also organizing public debates in a hall in each town or village to allow people direct face to face opportunities to debate the questions.

Many Chinese live in rural areas and this fact has to be considered when proposing direct participation via mobile phones. On the one hand, mobile phone penetration has reached 75% in China ("China's Mobile Subscribers Rise 1.3 pct to 951.6 Mln in Oct," November 21, 2011. <http://www.reuters.com/article/2011/11/21/china-mobile-idUSL4E7LS00V20111121>). Given this high penetration, two factors could impede the use of mobile phones in participatory democracy: the constraints imposed by the rural environment and prevalence of illiteracy which could prevent use of texting features. There is evidence that rural areas, worldwide, are increasingly using mobile technology ("Rural Chinese Get Online as Mobile Overtakes Desktop," BBC, July 19, 2012). The mobile phones are actually being used to address illiteracy in countries where this is a problem (Carmody 2010). Recent studies report that illiteracy is not necessarily a bar to mobile phone usage (Knoche and Huang 2012; Srivastava 2012).

Moreover, illiteracy is not a bar to intelligent opinion about the issues of the day. Direct democracy in the ancient world, as still practiced in Switzerland (figure 9), involved the whole city irrespective of literacy levels. It worked because the debates could be heard by all citizens in public arenas. The votes did not involve reading or writing, as most do today. In rural China this is still feasible. In cities, citizens generally have access to television, which can be used to transmit clear and easy instructions for voting using numeric values only should literacy be an issue. The majority of people who would be considered illiterate are still able to work very competently with numbers since most use cash. For example, consider a simple matter for decision: whether refuse should be collected daily or weekly. The options could be verbally communicated to voters, together with the telephone number to dial for each option. The voter then simply dials the number matching the option they prefer.

## Discussion

From the early twentieth century until today political decisions have been taken by the leaders of mass political parties. The leadership of these parties controls the agenda and puts through the decisions in assemblies in which their party members have an overall majority. The role of the public has been limited to conferring legitimacy on one or other group of political leaders. In a direct or participatory democracy the role of leaders and parties would change radically:

- they would no longer be mobilizing to win support for politicians;
- they would have to be working to mobilize public opinion;
- they would become much more ideological, with a much more overt struggle between different ideologies becoming manifest;
- they would be there because of conviction, and not to build their own careers.



Figure 9. Direct democratic town meeting at Canton of Glarus, Switzerland in 2006.



Source: Image from [http://en.wikipedia.org/wiki/File:Landsgemeinde\\_Glarus\\_2006.jpg](http://en.wikipedia.org/wiki/File:Landsgemeinde_Glarus_2006.jpg).

While this is very different from the way political parties operate in multi-party states, it has some similarities to the way the Communist Party of China (CPC) operated in its early years when it did not command direct power. China is currently debating how to extend democracy without running into the dangers that hit the USSR under Mikhail Gorbachev. There is a real danger that, were it to adopt a US style presidential multi-party system, it would end up as the sort of corrupt oligarchy that Boris Yeltsin introduced to Russia.

An alternative is to harness the power of information technology to bring the great mass of the people into direct political participation. These mechanisms provide a solution to many of the problems faced by socialist polities. They ensure that no minority class can dominate the state. Major decisions by plebiscite, i.e., directly by the people, will prevent any minority class from imposing its objectives. Since the working classes, at least in a non-rentier state, are a majority of the population, they will predominate. A traditional objection to plebiscitary democracy is that it has been a tool of tyrants who, it is alleged, selected the agenda on which the plebiscites were to be held. In Britain, there has historically been suspicion on the issue of referenda. Atlee, the Labour Prime Minister in the late 1940s, turned down a proposal by Churchill to hold a referendum with the words:

I could not consent to the introduction into our national life of a device so alien to all our traditions as the referendum, which has only too often been the instrument of Nazism and Fascism. Hitler's practices in the field of referenda and plebiscites can hardly have endeared these expedients to the British heart. (Bogdanor 1988, 12)

His fear was that a dictator like Hitler could manipulate the topics that were put to the popular vote so that only topics that he knew would be approved were put to the vote. Under these



circumstances, rather than giving real power to the people, the referendum would act simply as a means of increasing the prestige of the dictator and paying lip-service to the concept of democracy. If, on the other hand, a twenty-first century democracy were to follow the Athenian principle that a randomly selected council drew up motions to be voted on by the people, these fears would be alleviated since the council itself would be representative of the population at large.

## Conclusion

With genuine forms of democracy, the tendency of parliamentary systems to be dominated by the upper classes is removed, whilst at the same time the possibility of an entrenched revolutionary aristocracy or tyranny is minimized. Suppose the people “win the battle for democracy” in this sense, why should it lead to socialism? And might it not lead to a stable bourgeois republic like Switzerland, which has many of these constitutional features?

It all depends on two things: first on the socio-economic structure of the country and the relative weight within this of the working classes, and second on the level of political development of the working-class movement.

A true participatory democracy can only be established in a country today if it has a highly organized mass movement, with a coherent radical democratic ideology. The original concept of an *avant garde* movement, still applies.

The idea of a party as a force for mobilizing and ideologically developing the mass movement remains valid. In a participatory democracy leadership and command are two different things. A party can only get things done by influencing opinion, by persuasion. It cannot rely on the power of command as the Soviet communists did in the later years. A clear vision of the future, and a clear political economy, are crucial.

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## Notes on Contributors

Paul Cockshott is a Scottish computer scientist and a reader at the University of Glasgow. He has made contributions in the fields of image compression, 3D television, parallel compilers and persistent programming, but became known to a wider audience for his proposals in the multidisciplinary area of economic computability, most notably as co-author of the book *Towards a New Socialism*, advocating more efficient and democratic planning of a complex economy.

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